

**PLASMA IMMERSION ION IMPLANTATION PROCESS
USING A PLASMA SOURCE HAVING
LOW DISSOCIATION AND LOW MINIMUM PLASMA VOLTAGE**

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ABSTRACT

A method for ion implanting a species into a surface layer of a workpiece in a chamber includes placing the
10 workpiece in a processing zone of the chamber bounded by a chamber side wall and a chamber ceiling facing said workpiece and between a pair of ports of the chamber near generally opposite sides to the processing zone and connected together by a conduit external of the chamber.
15 The method further includes introducing into the chamber a process gas comprising the species to be implanted, and further generating from the process gas a plasma current and causing the plasma current to oscillate in a circulatory reentrant path comprising the conduit and the processing
20 zone.